

WHAT IS CLAIMED IS:

1. A method for enhancing bone density or formation, the method comprising administering to at least one first cell associated with a region of a bone at least one first nucleic acid encoding at least one angiogenic protein, such that the first nucleic acid is expressed in the cell to produce the angiogenic protein, whereby bone density or formation is enhanced within the region.

2. The method of claim 1, wherein at least one of the nucleic acids is exposed to at least one cell *in vivo* in the region of the bone.

3. The method of claim 1, wherein at least one of the nucleic acids is exposed to at least one cell *ex vivo*, which is then delivered *in vivo* to the region of the bone.

4. The method of claim 1, wherein the angiogenic protein is a vascular endothelial growth factor (VEGF), a connective tissue growth factor (CTGF), VEGF2, VEGF-C, a fibroblast growth factor (FGF), an angiopoietin, an angiopoietin homologous proteins, an angiogenin, an angiogenin-2, PlGF, or a derivative thereof.

5. The method of claim 1, wherein the angiogenic protein is selected from the group consisting of VEGF₁₂₁, VEGF_{A138}, VEGF_{A162}, VEGF₁₆₅, VEGF₁₈₂, VEGF₁₈₉, and derivatives thereof.

6. The method of claim 1, further comprising administering to at least one second cell associated with the region at least one second nucleic acid encoding at least one osteogenic protein, such that the second nucleic acid is expressed in the cell to produce the osteogenic protein.

7. The method of claim 6, wherein the osteogenic protein is selected from the group consisting of a bone morphogenic protein (BMP), a transforming growth factor (TGF), a latent TGF binding protein (LTBP), latent membrane protein-1 (LMP-1), a heparin-binding neurotrophic factor (HBNF), growth and differentiation factor-5 (GDF-5), a parathyroid hormone (PTH), a fibroblast growth factor (FGF), an epidermal growth factor (EGF), a platelet-derived growth factor (PDGF), an insulin-like growth factor, a growth factor receptor, a cytokine, a chemotactic factor, a granulocyte/macrophage colony stimulating factor (GMCSF), a LIM mineralization protein (LMP), a leukemia inhibitory factor (LIF), a hedgehog protein, midkine (MK), and derivatives thereof.

8. The method of claim 6, wherein the osteogenic protein is selected from the group consisting of BMP-2, BMP-3, BMP-4, BMP-5, BMP-6, BMP-7 and BMP-8.

9. The method of claim 6, wherein the osteogenic protein is TGF- β 1.

10. The method of claim 6, wherein the osteogenic protein is BMP-2.

11. The method of claim 6, wherein the osteogenic protein is MK.

12. The method of claim 6, wherein the osteogenic protein is HBNF.

13. The method of claim 6, wherein the angiogenic protein is a VEGF, and the osteogenic protein is TGF- β 1.

14. The method of claim 6, wherein the angiogenic protein is a VEGF, and the osteogenic protein is BMP-2.

15. The method of claim 6, wherein the angiogenic protein is a VEGF, and the osteogenic protein is MK.

5 16. The method of claim 6, wherein the angiogenic protein is a VEGF, and the osteogenic protein is HBNF.

17. The method of claim 6, wherein the first cell and the second cell are the same.

18. The method of claim 6, wherein the first nucleic acid and the second nucleic acid are the same.

19. A viral vector comprising at least one first nucleic acid encoding at least one angiogenic protein and at least one second nucleic acid encoding at least one osteogenic protein.

20. The viral vector of claim 19, which is an adenoviral vector.

21. The viral vector 19, which is deficient in at least one essential gene function.

22. A bone graft comprising at least one first cell having at least one first exogenous nucleic acid encoding at least one angiogenic protein and at least one second cell having at least one second nucleic acid encoding at least one osteogenic protein.

23. The bone graft of claim 19, wherein the osteogenic protein is selected from the group consisting of a bone morphogenic protein (BMP), a transforming growth factor (TGF), a latent TGF binding protein (LTBP), latent membrane protein-1 (LMP-1), a heparin-binding neurotrophic factor (HBNF), growth and differentiation factor-5 (GDF-5), a parathyroid hormone (PTH), a fibroblast growth factor (FGF), an epidermal growth factor (EGF), a platelet-derived growth factor (PDGF), an insulin-like growth factor (IGF), a growth factor receptor, a cytokine, a chemotactic factor, a granulocyte/macrophage colony stimulating factor (GM-CSF), a LIM mineralization protein (LMP), a leukemia inhibitory factor (LIF), a hedgehog protein, midkine (MK), and derivatives thereof.

24. The bone graft of claim 19, wherein the angiogenic protein is a vascular endothelial growth factor (VEGF).

25. The bone graft of claim 19, which is an allograft.

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